

REMARKS

Claims 1-17 are pending. Applicant gratefully acknowledges the Office Action indication that claims 7 and 10-12 contain allowable subject matter.

By this Amendment, claim 1 is amended to recite that the image data is compressed by discarding pixels along a direction parallel to an edge and that the at least one synthesized pixel represents at least one discarded pixel, to distinguish the applied art. Claim 3 is amended to use correct antecedent basis consistent with the amendments made to claim 1. Claims 7 and 15 are amended to obviate informalities and not for substantial reasons of patentability. Claim 16 is amended to rephrase the subject matter recited therein, as suggested by the Examiner. Accordingly, claim 17 is amended to use language consistent with the amendments made to claim 16.

No new matter is added. Reconsideration based on the above amendments and following remarks is respectfully requested.

The attached Appendix includes marked-up copies of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

Applicant thanks Examiner Do for the copy of the acknowledged Information Disclosure Statement and for the courtesy extended to Applicant's representative, Gang Luo, during an August 27, 2002, personal interview. The substance of the interview is incorporated in the remarks below.

The Office Action rejects claim 16 under 35 U.S.C. §112, first paragraph. This rejection is respectfully traversed.

The Office Action asserts that claim 16 is a single means claim. However, as discussed at the interview, Applicant respectfully submits that claim 16 is not recited in a means-plus-function format, but recites a device that includes a system recited in claim 15. Thus, claim 16 does not include "every conceivable structure" as is the situation in Hyatt.

Rather, claim 16 is limited by the structure recited in claim 15. Accordingly, claim 16 is not a single means claim.

Nevertheless, claim 16 is amended, as the Examiner suggested at the interview, for the sake of expediting prosecution. Accordingly, withdrawal of the rejection of claim 16 under 35 U.S.C. §112, first paragraph is respectfully solicited.

The Office Action rejects claim 7 under 35 U.S.C. §112, second paragraph. Claim 7 is amended to obviate this rejection. Withdrawal of the rejection of claim 7 is respectfully solicited.

The Office Action rejects claims 1, 3-6, 8, 9 and 15-17 under 35 U.S.C. §102(a) over Honma et al. (U.S. Patent No. 5,774,634). This rejection is respectfully traversed.

The Office Action asserts that Honma discloses all elements recited in claims 1 and 15. However, Applicant respectfully submits that Honma does not disclose or suggest decompressing image data, that is compressed by discarding pixels along a direction parallel to an edge; and synthesizing data ... to provide data corresponding to at least one synthesized pixel, the at least one synthesized pixel representing at least one discarded pixel, as recited in claim 1.

As discussed at the interview, Honma discloses an image processing apparatus having a decoding circuit 12. See Fig. 4 and col. 9, lines 59-62. Line picture data and half tone image data are encoded and stored as compressed image. See Fig. 4 and col. 9, lines 28-43. Thus, Honma discloses data compression by way of encoding, and not by discarding pixels. Also, Honma discloses an image synthesizing circuit 13 for the purpose of synchronization between discriminated data. See Fig. 4 and col. 9, lines 50-58. Thus, Honma discloses synthesizing for synchronization, and not for providing data corresponding to synthesized pixel. Nowhere does Honma disclose or suggest decompressing image data, that is compressed by discarding pixels along a direction parallel to an edge; and synthesizing data

... to provide data corresponding to at least one synthesized pixel, the at least one synthesized pixel representing at least one discarded pixel, as recited in claim 1.

Regarding claim 15, the Office Action asserts that col. 1, lines 44-63 of Honma disclose the decompression system recited in claim 15. However, Applicant respectfully submits that Honma does not disclose or suggest using extra resolution across edges of marks, as recited in claim 15.

As discussed at the interview, Honma discloses decoding compressed data stored in an image memory 14 by a decoding circuit 12. See col. 1, lines 43-47. The compressed data stored in memory 14 are encoded data. See col. 1, lines 41-43. Honma touches on the general topic that characters and line pictures must be stored with priority given to the resolution, while photographs and graphs must be stored with priority given to the gradation. See col. 1, lines 57-64. However, nowhere does Honma disclose or suggest different resolution in different directions of a non-continuous tone image. Thus, Honma does not disclose or suggest using extra resolution across edges of marks, as recited in claim 15.

For at least the above reasons, Honma does not disclose or suggest the subject matter recited in claims 1 and 15, and claims 3-6, 8, 9, 16 and 17 depending therefrom. Withdrawal of the rejection of claims 1, 3-6, 8, 9 and 15-17 under 35 U.S.C. §102(a) is respectfully solicited.

The Office Action rejects claims 13 and 14 under 35 U.S.C. §102(e) over Shannon et al. (U.S. Patent No. 6,026,196). This rejection is respectfully traversed.

The Office Action asserts that Shannon discloses the decompression method recited in claim 13. However, Applicant respectfully submits that Shannon does not disclose or suggest decompressing a single byte of compressed data to produce four pixels of non-continuous tone data, as recited in claim 13.

As discussed at the interview, Shannon discloses a contrived dither matrix for enhancing the compressability of raster images. See, col. 1, lines 9-11. Shannon is directed to high resolution images that resemble photographs. See, col. 5, lines 1-3. Thus, Shannon discloses a compression method for continuous tone data. Accordingly, Shannon does not disclose decompressing a single byte of compressed data to produce four pixels of non-continuous tone data, as recited in claim 13.

As further discussed at the interview, Shannon discloses a compressed line of data starting with a sync byte 20 followed by data for strings S1, S2, S3 and S4. See Fig. 7 and col. 9, lines 26-30. The sync byte 20 contains information regarding the arrangement of strings S1-S4 and whether the value of a dither displacement is 0, 1, 2, or 3 (*i.e.*, 0-3) pixels. See col. 10, lines 30-37. Thus, Shannon's sync byte does not contain image pixel data, much less four pixels of non-continuous tone data, as recited in claim 13.

Also, Shannon's data pixel, or element of strings S1-S4, contains 4 bits. See col. 9, lines 19-20. Thus, in Shannon, each single data byte contains only 2 data pixels. In addition, Shannon's compressed line contains all 4 bits from each element of the 4 strings S1-S4. See col. 9, lines 19-26. Thus, in Shannon, each pixel is decompressed from the bits in the compressed line, and not synthesized from other pixels. Therefore, Shannon does not disclose or suggest producing four pixels from the decompression of a single byte. Accordingly, Shannon does not disclose or suggest decompressing a single byte of compressed data to produce four pixels of non-continuous tone data, as recited in claim 13.

For at least the above reasons, Shannon does not disclose or suggest the subject matter recited in claim 13, and claim 14 depending therefrom. Withdrawal of the rejection of claims 13 and 14 under 35 U.S.C. §102(e) is respectfully solicited.

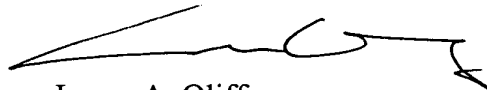
The Office Action rejects claim 2 under 35 U.S.C. §103(a) over Honma et al. This rejection is respectfully traversed.

As discussed above, Honma does not disclose or suggest decompressing image data, that is compressed by discarding pixels along a direction parallel to an edge; and synthesizing data ... to provide data corresponding to at least one synthesized pixel, the at least one synthesized pixel representing at least one discarded pixel, as recited in claim 1. Thus, Honma does not disclose or suggest the subject matter recited in claim 1, and claim 2 depending therefrom. Withdrawal of the rejection of claim 2 under 35 U.S.C. §103(a) is respectfully solicited.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-17 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number set forth below.

Respectfully submitted,



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Attachment: Appendix

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APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claims:

1. (Amended) A method for decompressing image data, that is compressed by discarding pixels along a direction parallel to an edge, representing a plurality of pixels and represented by a plurality of bitwords, each pixel corresponding to a separate bitword, the process comprising:
 - decompressing data from a compressed-data-bitword to provide data indicative of a plurality of explicit pixels; and
 - synthesizing data from the data indicative of the plurality of explicit pixels to provide data corresponding to at least one synthesized pixel, the at least one synthesized pixel representing at least one discarded pixel.
3. (Amended) The method of claim 1, wherein, during decompression, non-continuous tone data with a high spatial resolution in one dimension is decompressed into a high spatial resolution bitword-map with reference to information indicating a~~the~~ direction of an~~the~~ edge within the image data.
7. (Amended) The method of claim 6, wherein, decompressing the data from the compressed bitword comprises:
 - referencing ~~the~~ a segmentation bit of the bitword to determine whether the bitword contains non-continuous tone data;
 - referencing ~~the~~ a direction bit to determine whether the direction of the edge located in spaced relationship to ~~the~~ a first and a second pixels;
 - referencing ~~the~~ a three-bit value indicative of the first pixel; and
 - referencing ~~the~~ a three-bit value indicative of the second pixel.

15. (Amended) A decompression system for decompressing image data, the system comprising:

a decompressor that decompresses a data bitword-map to provide high spatial resolution data containing non-continuous tone data using extra resolution across edges of the marks, and that decompresses the data bitword-map to provide low spatial resolution continuous tone data.

16. (Amended) ~~The An image forming device, including the decompression~~ system of claim 15, further comprising an image forming device, wherein the decompression system is incorporated in the image forming device.

17. (Amended) ~~The image forming device~~decompression system of claim 16, wherein the image forming device is one of at least a facsimile machine, a laser printer, an inkjet printer, a digital copier or a full-width-print bar printer.